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International Specialists in the Environment

MEMORANDUM

RECEIVED
JAN 31 1991
PREP SECTION

TO: Pete Culver, RPO

THRU: Sharon Martin, Acting FITOM

FROM: E & E/FIT

DATE: January 30, 1991

SUBJECT: HRS Considerations for the Laclede Coal Gas Plant Site, St. Louis, Missouri.
TDD #F-07-9008-020 PAN #FM00579SA
Site #Y33 Project #002
Superfund Contact: Greg Reesor
Project Manager: Keith A. Brown

Site: Laclede Coal Gas
ID #: MOD981715980
Break: 1.8
Other:
1-30-91

INTRODUCTION AND BACKGROUND

The Region VII U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc., Field Investigation Team (E & E/FIT) to conduct a Screening Site Inspection (SSI) of the former Laclede Coal Gas Plant site in St. Louis, Missouri. The purpose of the SSI is to determine whether waste remains on site, posing potential hazards to human health or the surrounding environment.

The site is a former manufactured gas plant. Tar sludges (coal tars) and spent oxides are the two waste streams of primary concern. Coal tar wastes are primarily polynuclear aromatic hydrocarbons (PAHs) and phenols that were produced during coal or coke combustion. Spent iron oxide wastes were produced during the gas purification process where impurities were removed from the manufactured gas. Iron oxide wastes contain sulfur compounds, cyanide compounds, and small quantities of coal tar.

The site was first investigated by E & E/FIT on September 17, 1987. A site reconnaissance was conducted at the Mound Street Power Plant to aid in preparing a Preliminary Assessment (PA) report; the plant is located on the former Laclede Coal Gas property. The Mound Street Plant is now owned by McKinley Iron and it is in the process of being razed. The PA was prompted by reports of oil accumulation in the facility and the occasional release of oil into the adjacent Mississippi River. Six liquid samples were collected from the basement of the facility, where hydraulic oil from electrical transformers allegedly was stored. Two samples from two different manholes adjacent to the facility were also sampled. All samples were screened for PCBs at a 1 ppm detection limit. No PCB contaminants were identified by the Tracor gas chromatograph.

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The E & E/FIT conducted a second site reconnaissance on November 20, 1990, to facilitate preparation of the work plan for the SSI. The FIT observed seepage from the foundation and piping system of an abandoned pump house that was formerly owned by the Mound Street Power Plant. The pipes, which originate from the plant, had been plugged with concrete, but seepage was still leaching through the concrete. Because this pump house is located on the east side of the flood control levee, this leachate was observed to be seeping directly into the Mississippi River.

HRS CONSIDERATIONS

A preliminary Hazardous Ranking System (HRS) score of 50 was calculated for the Laclede Coal Gas site. The ground water pathway was assigned a score of 1, based on a suspected release to ground water. This low score reflects the fact that ground water is not used for drinking water within the 4-mile target distance limit. An observed release to ground water is likely if wastes are found to be buried on site, because the ground water table is relatively shallow. The preliminary ground water score is based on the minimum value for waste quantity (18). It is FIT's professional judgment that waste quantity is particularly large at this site, since it is one of the largest coal gas plant sites investigated by Region VII. However, if waste quantity at the Laclede Coal Gas Plant site receives the maximum HRS value of 100, the overall pathway score would only increase to 3, because of the low number of targets.

The surface water pathway is the primary pathway of concern and is given the maximum value of 100. Leaching of waste into the Mississippi River was observed during an SSI reconnaissance; therefore, a suspected release was evaluated for the preliminary surface water pathway score. It should be noted that the constituents of the waste are still unknown. The Illinois community of Metro East receives water from a surface water intake located east across the river approximately 1/4 mile from the site. Sports fishing on the Mississippi River has also been documented relatively close to the site. Drinking water and food chain targets are evaluated along the 15-mile target distance limit and are considered primary targets under HRS evaluation. Waste quantity is given an HRS value of 32, since primary targets were evaluated for the surface water pathway and this value is greater than the determined waste quantity value. Further investigative work is needed to confirm migration to the nearby surface water body. The nearest sensitive environment is about 10 miles downstream.

The probability of documenting an air release for the Laclede Coal Gas site is low. The pathway was evaluated according to the no suspected release criteria, generating a pathway score of 9. No primary targets exist for the pathway. The nearest individual is about 1/4 mile from the site and no sensitive environments exist within 1/2 mile from the boundaries of the site.

The soil exposure pathway score is 3. FIT determined that no targets live on or within 200 feet of suspected contamination. A total of 11 workers were evaluated for potentially threatened targets.

An SSI is recommended for the Laclede Coal Gas site to determine if the sludges (coal tars) and spent oxides are buried on site and pose an environmental hazard.

After the SSI is completed and the preliminary HRS evaluations are verified, an updated score will be calculated. This site has a medium potential to score for the NPL.

Attachments: HRS PA Scoresheets and Reference List

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Site Name: LaClede Pipe Coas
Date: 1-14-91

GROUND WATER PATHWAY SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Ground Water Pathway Criteria List, page 7)?	Yes ✓ No ___
Is the site located in karst terrain?	Yes ___ No ✓
Depth to aquifer:	Shallow ft
Distance to the nearest drinking-water well:	GW not used for drinking water ___ ft

	A Suspected Release	B No Suspected Release	Reference
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to ground water (see page 7), assign a score of 550, and use only column A for this pathway.	550		(1)(2)(4)
2. NO SUSPECTED RELEASE: If you do not suspect a release to ground water, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Use only column B for this pathway.			___
* Observed release likely if waste present / buried on site. LR =	550		___
TARGETS			
3. PRIMARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you suspect have been exposed to hazardous substances from the site (see Ground Water Pathway Criteria List, page 7). ___ people x 10 =	___		(2)(3)
4. SECONDARY TARGET POPULATION: Determine the number of people served by drinking water from wells that you do NOT suspect have been exposed to hazardous substances from the site, and assign the total population score from PA Table 2. Are any wells part of a blended system? Yes ___ No ___ If yes, attach a page to show apportionment calculations.	___		(2)(4)
5. NEAREST WELL: If you have identified any Primary Targets for ground water, assign a score of 50; otherwise, assign the highest Nearest Well score from PA Table 2. If no drinking-water wells exist within 4 miles, assign a score of zero.	___		(2)(4)
6. WELLHEAD PROTECTION AREA (WHPA): Assign a score of 20 if any portion of a designated WHPA is within ¼ mile of the site; assign 5 if from ¼ to 4 miles.	___		___
7. RESOURCES: A score of 5 is assigned.	5	5	
T =	5		
WASTE CHARACTERISTICS			
8. A. If you have identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.			
B. If you have NOT identified any Primary Targets for ground water, assign the waste characteristics score calculated on page 4.	18		
WC =	18		

GROUND WATER PATHWAY SCORE: $\frac{LR \times T \times WC}{82{,}500}$ = 1

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Site Name: Laclede Coal Gas 12

Date: 1-14-91

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Surface Water Pathway Criteria List, page 11)?	Yes ✓ No ___
Distance to surface water:	100 ft
Flood Frequency:	500 yrs
What is the downstream distance to the nearest drinking-water intake?	< 1/4 miles
nearest fishery?	1 miles
nearest sensitive environment?	10 miles

	A Suspected Release	B No Suspected Release	References
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to surface water (see page 11), assign a score of 550, and use only column A for this pathway.	[550] 550		(1)(2)(6)
2. NO SUSPECTED RELEASE: If you do not suspect a release to surface water, and the distance to surface water is 2,500 feet or less, assign a score of 500; otherwise, assign a score from the table below. Use only column B for this pathway.		[500, 400, 300 or 100]	
* Deposition of potential waste into surface water has been observed. LR =	[550] 550	[500, 400, 300 or 100]	

Floodplain	Score
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

DRINKING WATER THREAT TARGETS

3. Determine the water body types, flows (if applicable), and number of people served by all drinking-water intakes within the 15-mile target distance limit. If there are no drinking-water intakes within the target distance limit, assign a total Targets score of 5 at the bottom of this page (Resources only) and proceed to page 14.

Intake Name	Water Body Type	Flow	People Served
Ill. American Water Comm.	River	147,000 cfs	300,000
		cfs	
		cfs	

(3) (4)

4. PRIMARY TARGET POPULATION: If you suspect any drinking-water intake listed above has been exposed to hazardous substances from the site (see Surface Water Pathway Criteria List, page 11), list the intake name(s) and calculate the factor score based on the number of people served.

Ill. American Water Com., Illinois Metro East Community ≥ 300,000 people x 10 = 3009000 (3)(4)

5. SECONDARY TARGET POPULATION: Determine the Secondary Target Population score from PA Table 3 based on the populations using drinking-water from intakes that you do NOT suspect have been exposed to hazardous substances from the site. —

Are any intakes part of a blended system? Yes ___ No ___
If yes, attach a page to show apportionment calculations.

6. NEAREST INTAKE: If you have identified any Primary Targets for the drinking water threat (Factor 4), assign a score of 50; otherwise, assign the Nearest Intake score from PA Table 3. If no drinking-water intake exists within the 15-mile target distance limit, assign a score of zero.

[50, 20, 10, 2, 1, or 0] 50 | [20, 10, 2, 1, or 0] — (3)(4)

7. RESOURCES: A score of 5 is assigned. [5] 5 | [5] 5

T = 3,000,055

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Site Name: Laclede Coal Gas 14
Date: 1-14-91

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT SCORESHEET

LIKELIHOOD OF RELEASE		A Suspected Release	B No Suspected Release	References
		(550)	(500, 400, 300 or 100)	
Enter the Surface Water Likelihood of Release score from page 12.	LR =	550		

HUMAN FOOD CHAIN THREAT TARGETS

8. Determine the water body types and flows (if applicable) for all fisheries within the 15-mile target distance limit. If there are no fisheries within the target distance limit, assign a Targets score of 0 at the bottom of this page and proceed to page 15.

Fishery Name	Water Body Type	Flow
Mississippi River	river	147,000 cfs
		cfs
		cfs
		cfs
		cfs

(9)

9. PRIMARY FISHERIES: If you suspect any fishery listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 10. List the Primary Fisheries:

Fishery (Recreational), _____,
_____, _____.

(300 or 0) — 300

(5)

10. SECONDARY FISHERIES: If you have not identified any Primary Fisheries, assign a Secondary Fisheries score from the table below using the LOWEST flow at any fishery within the 15-mile target distance limit.

Lowest Flow	Secondary Fisheries Score
< 10 cfs	210
10 to 100 cfs	30
> 100 cfs, coastal tidal waters, oceans, or Great Lakes	12

(210, 30, 12 or 0) — —

		(300, 210, 30, 12 or 0)	(210, 30, 12 or 0)
T =		300	

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Site Name: Lackawanna Coal Gas 15

Date: 1-14-91

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT SCORESHEET

	A	B	
LIKELIHOOD OF RELEASE	*Suspected Release*	*No Suspected Release*	*References*
Enter the Surface Water Likelihood of Release score from page 12. LR =	[550] 550	[500, 400, 300 or 100]	

ENVIRONMENTAL THREAT TARGETS

11. Determine the water body types and flows (if applicable) for all surface water sensitive environments within the 15-mile target distance limit (see PA Tables 4 and 5). If there are no sensitive environments within the 15-mile target distance limit, assign a Targets score of 0 at the bottom of this page, and proceed to page 17.

Environment Name	*Water Body Type*	*Flow*
_____	_____	_____ cfs
_____	_____	_____ cfs
_____	_____	_____ cfs
_____	_____	_____ cfs
_____	_____	_____ cfs

12. PRIMARY SENSITIVE ENVIRONMENTS: If you suspect any sensitive environment listed above has been exposed to hazardous substances from the site (see Surface Water Criteria List, page 11), assign a score of 300 and do not evaluate Factor 13. List the Primary Sensitive Environments:

_____, _____,

_____, _____.

[300 or 0] —

13. SECONDARY SENSITIVE ENVIRONMENTS:

A. For Secondary Sensitive Environments on surface water bodies with flows of 100 cfs or less, assign scores as follows, and do not evaluate part B of this factor:

Flow	*Dilution Weight (PA Table 4)*		*Environment Type and Value (PA Tables 5 and 6)*		*Total*
147,000 cfs	N/A	x	Wetland	=	0
cfs		x		=	
cfs		x		=	
cfs		x		=	
cfs		x		=	

Go to B

Sum =

B. If NO Secondary Sensitive Environments are located on surface water bodies with flows of 100 cfs or less, assign a score of 10.

[10 or 0] 10 | [10 or 0]

(5) (9)

T = 10

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Site Name: Laclede Coal Gas 17

Date: 1-14-91

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS

	A *Suspected Release*	B *No Suspected Release*
14. A. If you have identified ANY Primary Targets for surface water (pages 12, 14, or 15), assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	[100 or 32] 32	
B. If you have NOT identified any Primary Targets for surface water, assign the waste characteristics score calculated on page 4.	[100,32, or 18]	[100,32, or 18]
WC =	32	

SURFACE WATER PATHWAY THREAT SCORES

Threat	*Likelihood of Release (LR) Score (from page 12)*	*Targets (T) Score*	*Pathway Waste Characteristics (WC) Score (determined above)*	*Threat Score LR x T x WC / 82,500*
Drinking Water	550	3,000,055	32	[subject to a maximum of 100] 100
Human Food Chain	550	300	32	[subject to a maximum of 100] 64
Environmental	550	10	32	[subject to a maximum of 60] 2

SURFACE WATER PATHWAY SCORE
(Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

[subject to a maximum of 100] 100

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NOV 0 3 1990

Site Name: Laclede Cor/Cons 19
Date: 1-14-91

SOIL EXPOSURE PATHWAY SCORESHEET

Pathway Characteristics	
Do any people live on or within 200 ft of areas of suspected contamination?	Yes ___ No ✓
Do any people attend school or day care on or within 200 ft of areas of suspected contamination?	Yes ___ No ✓
Is the facility active? Yes ✓ No ___ If yes, estimate the number of workers: ___	

		A Suspected Contamination	B No Suspected Contamination	References
LIKELIHOOD OF EXPOSURE				
1. SUSPECTED CONTAMINATION: Surficial contamination is assumed. A score of 550 is assigned.	LE =	(550) 550		
RESIDENT POPULATION THREAT TARGETS				
2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of suspected contamination (see Soil Exposure Pathway Criteria List, page 18). ___ people x 10 =		—		(1)(10)
3. RESIDENT INDIVIDUAL: If you have identified any Resident Population (Factor 2), assign a score of 50; otherwise, assign a score of 0.		(50 or 0) —		(1)(10)
4. WORKERS: Assign a score from the following table based on the total number of workers at the facility and nearby facilities with suspected contamination:		(15, 10, 5, or 0) 5		(6)
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value from PA Table 7 for each terrestrial sensitive environment that is located on an area of suspected contamination: None		—		(7)
6. RESOURCES: A score of 5 is assigned.	Sum =	(5) 5		
	T =	10		
WASTE CHARACTERISTICS				
7. Assign the waste characteristics score calculated on page 4.	WC =	(100, 32, or 18) 18		

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
>1,000	15

≈ 11 workers

Terrestrial Sensitive Environment Type	Value
___	___
___	___

RESIDENT POPULATION THREAT SCORE: $\frac{LE \times T \times WC}{82{,}500}$ = (subject to a maximum of 100) 1

NEARBY POPULATION THREAT SCORE:
Assign a score of 2 2

SOIL EXPOSURE PATHWAY SCORE:
Resident Population Threat + Nearby Population Threat (subject to a maximum of 100) 3

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Site Name: Laclede Coal Gas 22
Date: 1-14-91

AIR PATHWAY SCORESHEET

Pathway Characteristics	
Do you suspect a release (see Air Pathway Criteria List, page 21)?	Yes ___ No ✓
Distance to the nearest individual:	> 0 to ½ mile = _____ ft

	A Suspected Release	B No Suspected Release	References
LIKELIHOOD OF RELEASE			
1. SUSPECTED RELEASE: If you suspect a release to air (see page 21), assign a score of 550, and use only column A for this pathway.	(550)		___
2. NO SUSPECTED RELEASE: If you do not suspect a release to air, assign a score of 500, and use only column B for this pathway.		(500) 500	(1)(2)
LR =		500	
TARGETS			
3. PRIMARY TARGET POPULATION: Determine the number of people subject to exposure from a release of hazardous substances through the air (see Air Pathway Criteria List, page 21). _____ people x 10 =			___
4. SECONDARY TARGET POPULATION: Determine the number of people within the 4-mile target distance limit, and assign the total population score from PA Table 8.		61	(8)
5. NEAREST INDIVIDUAL: If you have identified any Primary Targets for the air pathway, assign a score of 50; otherwise, assign the highest Nearest Individual score from PA Table 8.	(50, 20, 7, 2, 1, or 0)	(20, 7, 2, 1, or 0) 20	(10)
6. PRIMARY SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (PA Table 5) and wetland acreage values (PA Table 9) for environments subject to exposure from air hazardous substances (see Air Pathway Criteria List, page 21).			
Sensitive Environment Type / Value: _____ / _____; _____ / _____			
Sum =			___
7. SECONDARY SENSITIVE ENVIRONMENTS: Use PA Table 10 to determine the score for secondary sensitive environments. > ½ mile		—	(7)
8. RESOURCES: A score of 5 is assigned.	(5) 5	(5) 5	
T =		86	
WASTE CHARACTERISTICS			
9. A. If you have identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4, or a score of 32, whichever is GREATER; do not evaluate part B of this factor.	(100 or 32)		
B. If you have NOT identified any Primary Targets for the air pathway, assign the waste characteristics score calculated on page 4.	(100, 32, or 18)	(100, 32, or 18) 18	
WC =		18	

AIR PATHWAY SCORE: $\frac{LR \times T \times WC}{82{,}500}$ (subject to a maximum of 100) = 9

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Site Name: LaSalle Co/Co 24
Date: 1-14-91

SITE SCORE CALCULATION

	S	S^2
GROUND WATER PATHWAY SCORE (S_{gw}):	1	1
SURFACE WATER PATHWAY SCORE (S_{sw}):	100	10,000
SOIL EXPOSURE PATHWAY SCORE (S_{se}):	3	9
AIR PATHWAY SCORE (S_a):	9	81
SITE SCORE: $\sqrt{\frac{S_{gw}^2+S_{sw}^2+S_{se}^2+S_a^2}{4}}$ =		50

RECOMMENDATION

SUMMARY

	YES	NO
1. Is there a high possibility of a threat to nearby drinking water wells by migration of hazardous substances in ground water?	☐	☒
A. If yes, identify the wells recommended for sampling during the SI.		
B. If yes, how many people are served by these threatened wells?		
2. Are any of the following suspected to have been exposed to hazardous substances through surface water migration from the site?		
A. Drinking water intake	☒	☐
B. Fishery	☒	☐
C. Sensitive environment: wetland, critical habitat, others	☐	☒
D. If yes, identify the targets recommended for sampling during the SI. Poss. by the Illinois Drinking Water Intake Mississippi River		
3. Do people reside or attend school or day care on or within 200 ft of any area of suspected contamination?	☐	☒
4. Are there public health concerns at this site that are not addressed by PA scoring considerations? If yes, explain:	☐	☒

LACLEDE COAL GAS SITE

REFERENCES

1). Ecology and Environment, Inc., Field Investigation Team, November 20, 1990, Site Reconnaissance of the Laclede FMGP, TDD #F-07-9008-020.

2). Ecology and Environment, Inc., Field Investigation Team, June 23, 1988, Preliminary Assessment of the Former Union Electric Mound Street Power Plant Site, TDD #F-07-8708-029.

2a). Environmental Research & Technology, Inc., and Koppers Co Inc., September 1984, Handbook on Manufactured Gas Plant Sites.

3). Schlosser, Wayne, December 7, 1990, Community Relations Manager, Illinois American Water Company, telephone conversation with Keith Brown, E & E/FIT.

4). Ellis, Brian, December 7, 1990, Lieutenant, U.S. Coast Guard, telephone conversation with Keith Brown, E & E/FIT.

5). Nichols, Nick, August 31, 1990, Department Manager, City of St. Louis, Port Authority, telephone conversation with Keith Brown, E & E/FIT.

6). Lewis, Randal, January 11, 1991, Terminal Manager, Petroleum Fuel & Terminal Co., telephone conversation with Keith Brown, E & E/FIT.

7). Dickneite, Dan, Missouri Department of Conservation, January 8, 1991, letter to Keith Brown, E & E/FIT.

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9). Rapp, Jerry, December 7, 1990, Engineer, U.S. Corp of Engineers, telephone conversation with Keith Brown, E & E/FIT.

10). U.S. Geological Survey, 1968 revised, 7.5 Minute Series Topographic Map, Granite City Quadrangle, Missouri, Washington D.C.